

Session E61:
Making the most of CICS
Transaction Server

Neville Brailsford
neville_brailsford@uk.ibm.com

[RETURN TO INDEX](#)



VM/ESA and VSE/ESA
TECHNICAL CONFERENCE



e-business

- The following terms are trademarks of International Business Machines Corporation in the United States and/or other countries:
 - AIX
 - DB2
 - OS/390
 - VisualAge
 - CICS
 - MVS/ESA
 - VSE/ESA
 - CICS/VSE
 - OS/2
 - VTAM
- Java and Solaris are trademarks of Sun Microsystems, Inc
- Windows, Windows 95, Windows 98, and Windows NT are trademarks of Microsoft Corporation, Inc
- Other company, product, and service names may be trademarks or service marks of others



- **Introduction**

- Autoinstall for programs
- External CICS Interface
- Shared Data Tables
- Resource Definition
- Automatic Journal Archive
- Monitoring and Statistics
- Summary



e-business



IBM



- CICS Transaction Server offers many enhancements over CICS for VSE/ESA, which
 - Are easy to implement
 - Bring great benefits
 - Result in easier management of CICS systems
 - Result in a reduction in system resource usage
 - Introduce improved statistics reporting
 - And introduce improved monitoring data collection
- We have added support for REXX, and will add support for CICS Web Support and the 3270 Bridge
 - E62 Expanding CICS - REXX and the 3270 Bridge
 - E08 CICS Web Support

Agenda

- Introduction
- **Autoinstall for programs**
- External CICS Interface
- Shared Data Tables
- Resource Definition
- Automatic Journal Archive
- Monitoring and Statistics
- Summary



e-business



IBM



Autoinstall for programs

- Easier management
 - Programs, mapsets and partitionsets don't have to be defined to CICS before being used
- Less systems resource usage
 - Table definitions are only created when needed
- Faster restarts
 - Cold starts don't have to install so many definitions
 - Warm and emergency starts may be quicker depending on whether cataloging is used
- System Autoinstall
 - Does not require model definitions, and the Autoinstall exit is provided ready for use



e-business



- Its easy!
- Define the CSPL Transient Data Queue
- Decide whether you want to catalog Autoinstalled programs
 - If yes, specify PGAICTLG=YES in the SIT
 - If no, specify PGAICTLG=NO in the SIT
- Add Group DFHPGAIP to CICS start up list
- Specify the name of your exit in PGAIEXIT in the SIT
 - CICS supplied DFHPGADX
 - If you choose another exit, ensure there is a definition for it in the CSD
- Specify PGAIPGM=ACTIVE in the SIT
- Start CICS and its done

- Autoinstall exit is not called for programs beginning DFH
- Supplied samples
 - COBOL is DFHPGAOX
 - PL/I is DFHPGALX
 - C is DFHPGAHX
- COMMAREA passed to the program is mapped by DFHPGACD
- Writing the exit in an LE language
 - If you choose to implement the exit in an LE language (for example COBOL) then you must ensure that all LE program definitions are installed before enabling the exit
 - ▶ *Refer to the Systems Definition Guide for full instructions*
- Change the default autoinstall program or model if you want to modify such things as CEDF, DATALOCATION

Agenda

- Introduction
- Autoinstall for programs
- **External CICS Interface**
- Shared Data Tables
- Resource Definition
- Automatic Journal Archive
- Monitoring and Statistics
- Summary



e-business



IBM



- Makes it easy to access a CICS application from a batch program
- Communication is via **pipes**
 - A pipe is a one-way communication path
 - Allocated on an MRO session
 - Supported via DFHIRP (Inter-Region communication program)
- One client program can establish multiple connections with different CICS
 - May be on behalf of different users
 - May be under different sub-tasks
- There are two programming interfaces
 - EXEC CICS LINK programming interface
 - EXCI CALL Interface



e-business



- For low frequency or single DPL requests
- Easier to code
 - Less programming errors
- Under the covers the EXEC CICS LINK is expanded into EXCI calls
- For example, you could call a program to
 - close/open files before/after running a backup job
 - disable/enable a transaction before/after running an update job for the associated program



e-business



IBM



- When you want to execute many requests
- More efficient than EXEC CICS LINK
 - You issue INITIALIZE_USER and ALLOCATE_PIPE only once
 - Then lots of DPL requests
 - Finally, you issue DEALLOCATE_PIPE when complete
- For example, you can call a program to
 - Produce batch reports based on a file open to CICS
 - Update a file from a batch process while the file is open to CICS



e-business



- CICS supplied sample programs
 - Server program
 - ▶ *DFH\$AXCS (available only in Assembler)*
 - Client programs
 - ▶ *DFH\$AXCC (Assembler)*
 - ▶ *DFH0CXCC (COBOL)*
 - ▶ *DFH\$PXCC (PL/I)*
 - ▶ *DFH\$DXCC (C)*
- These programs can be used to learn both EXEC CICS LINK and EXCI CALL interface techniques
- Client programs must be translated by the CICS TS translator using translator option EXCI
- Client programs must be link-edited with DFHXCSTB
- All client programs must be written to AMODE(31) standards

Agenda

- Introduction
- Autoinstall for programs
- External CICS Interface
- **Shared Data Tables**
- Resource Definition
- Automatic Journal Archive
- Monitoring and Statistics
- Summary



e-business



IBM



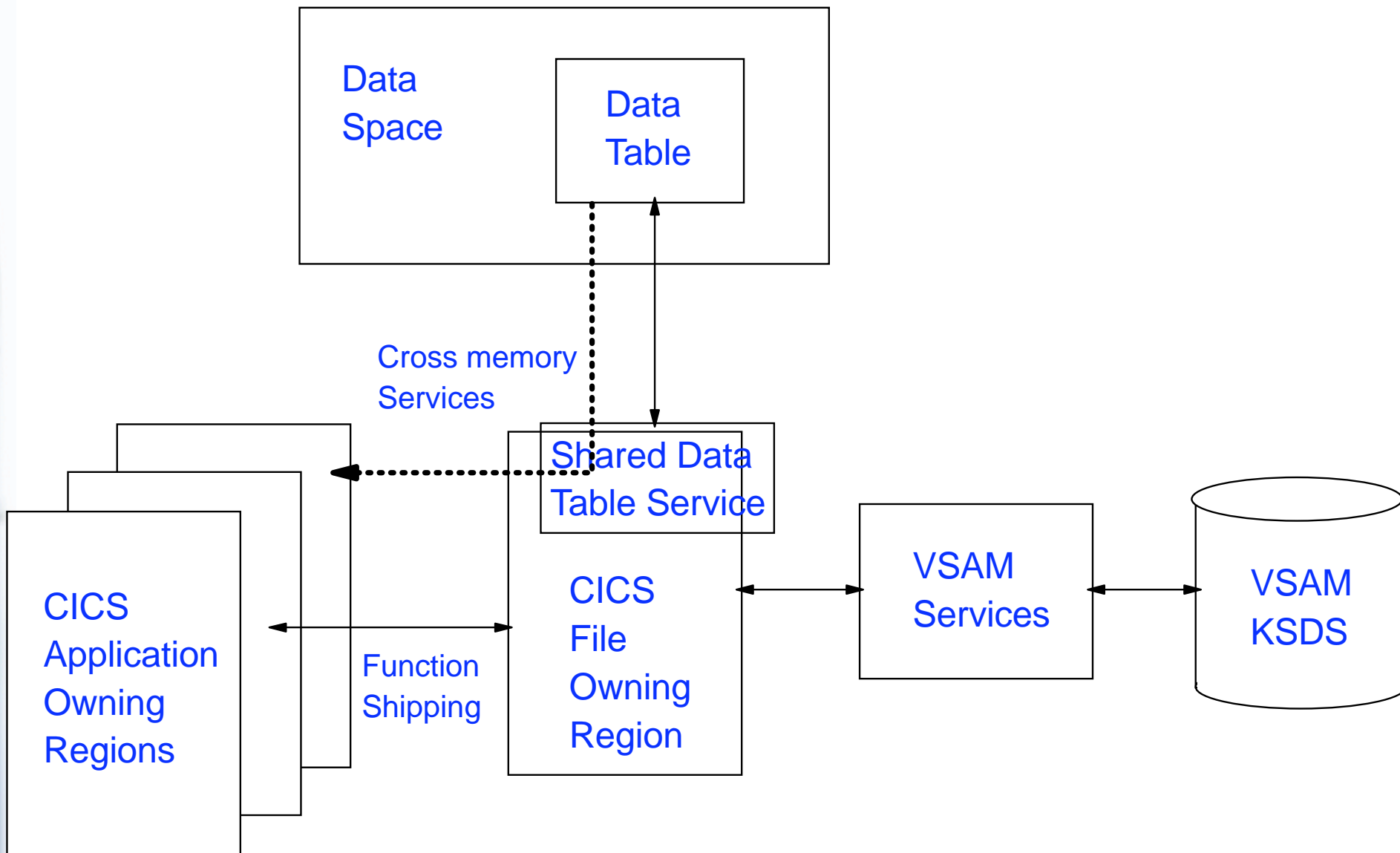
- Replaces and enhances the Data Tables support in CICS/VSE V2.3
 - Uses Cross memory services to access data 'owned' by another CICS
- Provides file sharing at reduced cost
 - Eliminates the need for function shipping for most read and browse requests
 - ▶ *Function ship may still be involved if READ UPDATE specified or record excluded from the table, for instance*
- Enhances support for more access requests to files in a data table
 - Allows generic read requests and allows browse requests
 - Which provides enhanced API support for User Maintained Tables
- Frees the FOR to process other requests since the access is done in the AOR
- Can result in smaller dumps and improved security, since the data is held in a separate address space, and is not dumped in the result of a CICS dump
- Improved availability
 - Several AORs can access the same data set concurrently

- Its easy!
- Ensure the following modules are in the SVA
 - DFHDT SVC, DFHCSEOT and DFHDT SAN
- Ensure that user exits are written using the command-level standards for
 - XDTRD, XDTAD and XDTLC (this step is optional!)
- Review VSE IPL parameters VSIZE and DSIZE to ensure that there is enough virtual and data space storage available
 - Storage is allocated in the data space initially as 2M and when more is needed, it is increased in 2M chunks
- Change file definitions to use Shared Data Tables
 - Specify Table as User or CICS, and define maximum number of records in RDO FILE definition
 - Specify TYPE=USERTABLE or TYPE=CICSTABLE in DFHFCT

Shared Data Tables - In action



e-business



Agenda

- Introduction
- Autoinstall for programs
- External CICS Interface
- Shared Data Tables
- **Resource Definition**
- Automatic Journal Archive
- Monitoring and Statistics
- Summary



e-business



IBM



- RDO for FILES
- RDO for CONSOLES
- Removing Installed resources
- Single resource Install
- Commitment of resources
- Other snippets



e-business



- Dynamic addition of file resources to running CICS system of
 - VSAM files
 - ▶ *CEDA DEFINE FILE() DSNAME() CATNAME()*
 - Remote VSAM or DAM files
 - ▶ *CEDA DEFINE FILE() REMOTESYSTEM() REMOTENAME()*
 - VSAM Local Shared Resource Pools
 - ▶ *CEDA DEFINE LSRPOOL() LSRPOOLID() MAXKEYLENGTH()*
 - Shared Data Tables
 - ▶ *CEDA DEFINE FILE() TABLE(CICS|USER)*
- DLBLs no longer required for VSAM files
 - If all VSAM files are defined using Resource Definition Online

- You must define consoles now for the system operator and any IUI user wishing to use console displays and any CMS user wishing to use VSECMD
- For example
 - System console
 - ▶ *DEFINE TERMINAL(xxxx) CONSNAME(SYS) TYPETERM(DFHCONS)*
 - Console for IUI user USRA
 - ▶ *DEFINE TERMINAL(xxxx) CONSNAME(USRA) TYPETERM(DFHCONS)*
- Pool of consoles
 - To allow a number of IUI users to access CICS without the need to define each console individually, specify a pool of consoles
 - ▶ *DEFINE TERMINAL(CO01) CONSNAME(DFHCON01) TYPETERM(DFHCONS)*
 - ▶ *DEFINE TERMINAL(CO02) CONSNAME(DFHCON02) TYPETERM(DFHCONS)*
 - ▶ ...
- VSE supply console definitions for the system console and 20 pooled consoles in VSESPG

- Installed resources can be removed from a running CICS
- Use CEMT DISCARD or EXEC CICS DISCARD
- Can be used for all resources, except
 - CONNECTION
 - SESSION
 - TERMINAL
 - TYPETERM
- Does not delete from the CSD - it only removes the definition from CICS
 - The discard action is preserved across warm and emergency restarts



e-business



IBM



- Install a single resource
- CEDA EXPAND GROUP has been enhanced to allow INSTALL to be typed against a resource
 - EXEC CICS CREATE can also be used to install a single resource, without having to define and install the resource on the CSD
- Cannot be used for CONNECTIONS
 - Except if CONNECTION has method(INDIRECT) specified
- Cannot be used for SESSIONS



e-business





e-business

- Resources are now committed immediately
 - This means that a group does not need to have every resource successfully installed before committing the individual resources

- Applied to most resources such as
 - FILE
 - PROGRAM
 - TRANSACTION

- Some resources still committed at the group level
 - CONNECTION
 - SESSIONS
 - TERMINAL
 - TYPETERM



- Descriptive comments
 - A description may be associated with all resources in the CSD
- Invoking DFHCSDUP from user programs
 - A user program may call DFHCSDUP, perhaps allowing a flexible user interface to be written to DFHCSDUP
- DFHCSDUP supports additional commands
 - You can use ALTER from DFHCSDUP
 - ▶ *This support also includes generic ALTER*
 - USERDEFINE allows you to specify your own defaults
- Programmable Interface to CEDA
 - Is now documented
- For more details on Resource Definition, see session
 - E65 Resource Definition Online (RDO) Hints and Tips

Agenda

- Introduction
- Autoinstall for programs
- External CICS Interface
- Shared Data Tables
- Resource Definition
- **Automatic Journal Archive**
- Monitoring and Statistics
- Summary



e-business



IBM



- Prompt submission of Archive Jobs
 - Eliminates the need for CICS tasks waiting for Journal Archiving to take place, and eliminates the need for JOUROPT=PAUSE on the DFHJCT definitions
- Removes the need for operator intervention
 - Unless the archive is to tape, or the archive job fails, the operators do not need to intervene to allow the journal to be archived.
- Provides greater security
 - Because CICS will not overwrite the journal until the journal is archived, any journal data required for recovery is not lost
- Eliminates the need for you to code your own automated procedures
 - You can still use DFHXJCO and DFHXJCC user-replaceable modules if you choose not use automatic journal archive

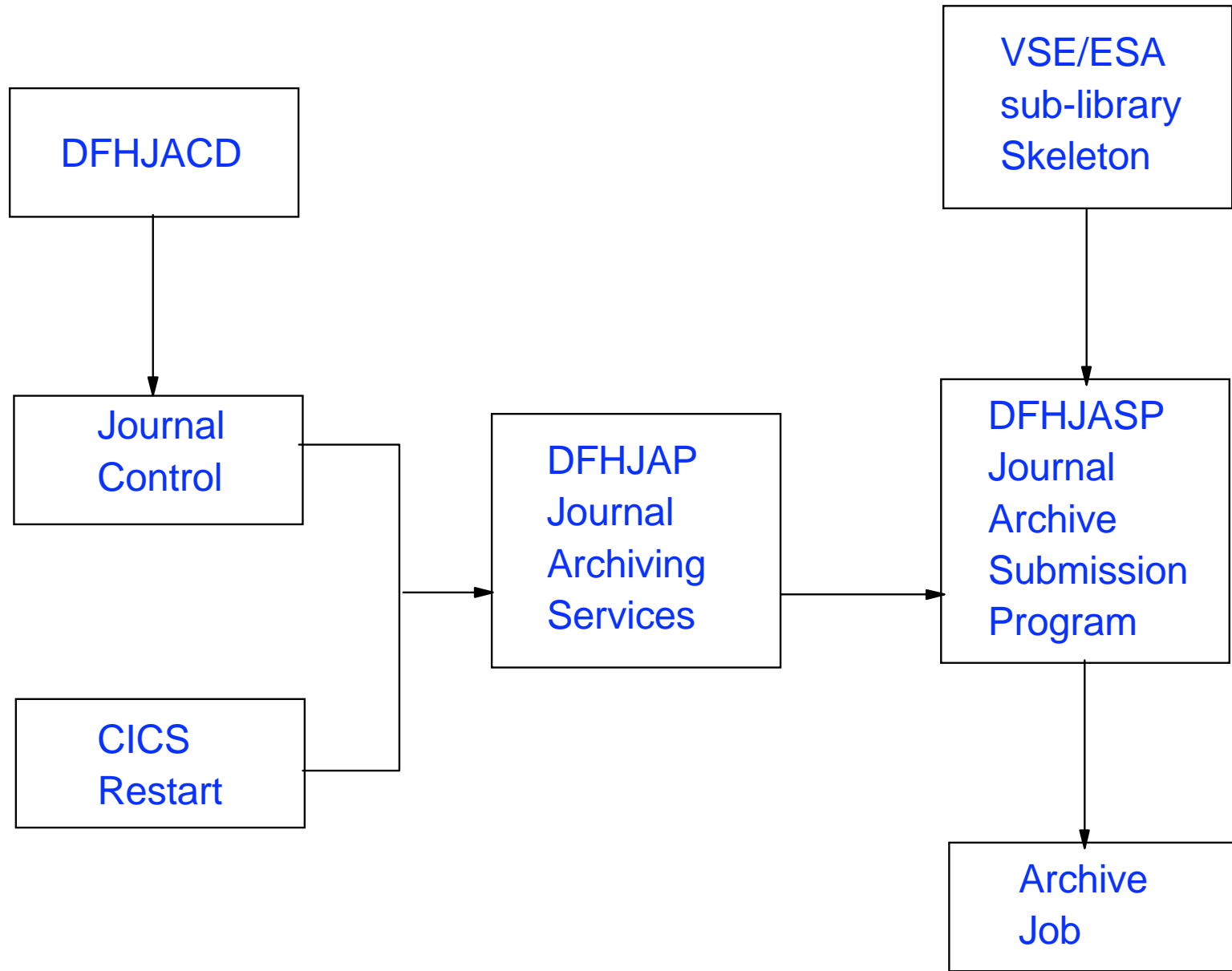
- Its easy!
- Define the journal archive control data set - DFHJACD
 - Its a VSAM file with the following characteristics
 - ▶ *Its an RRDS with a maximum of 198 records, record size 505 and CIC size of 512*
 - Add the DLBL to your CICS startup job stream
- Tailor the skeleton job
 - Supplied as DFH\$ARCH.J in PRD1.BASE
 - ▶ *Should be copied to a user sub-library, and must be named xxxx.DFHJASP*
 - ▶ *Then include LIBDEF SOURCE,SEARCH statement for the sub-library in the CICS start-up JCL*
- Add support to DFHJCT
 - Add AUTOARCH to JOUROPT for each journal you want to archive automatically, and ensure JTYPE=DISK2 is specified
 - Add ARCHJCL=xxxx for each journal you want to archive automatically

Automatic Journal Archive - Job Submission

Making the Most of CICS
Transaction Server



e-business



- Introduction
- Autoinstall for programs
- External CICS Interface
- Shared Data Tables
- Resource Definition
- Automatic Journal Archive
- **Monitoring and Statistics**
- Summary



e-business



IBM



- Monitoring and Statistics have been completely rewritten
- Monitoring no longer produces accounting records
- Statistics reporting is now performed by off-line utility DFHSTUP
- Now all data is collected by new CICS facility - DMF
- For lots of detail on CICS Transaction Server Performance see session
 - E41 CICS Transaction Server for VSE/ESA Performance



e-business



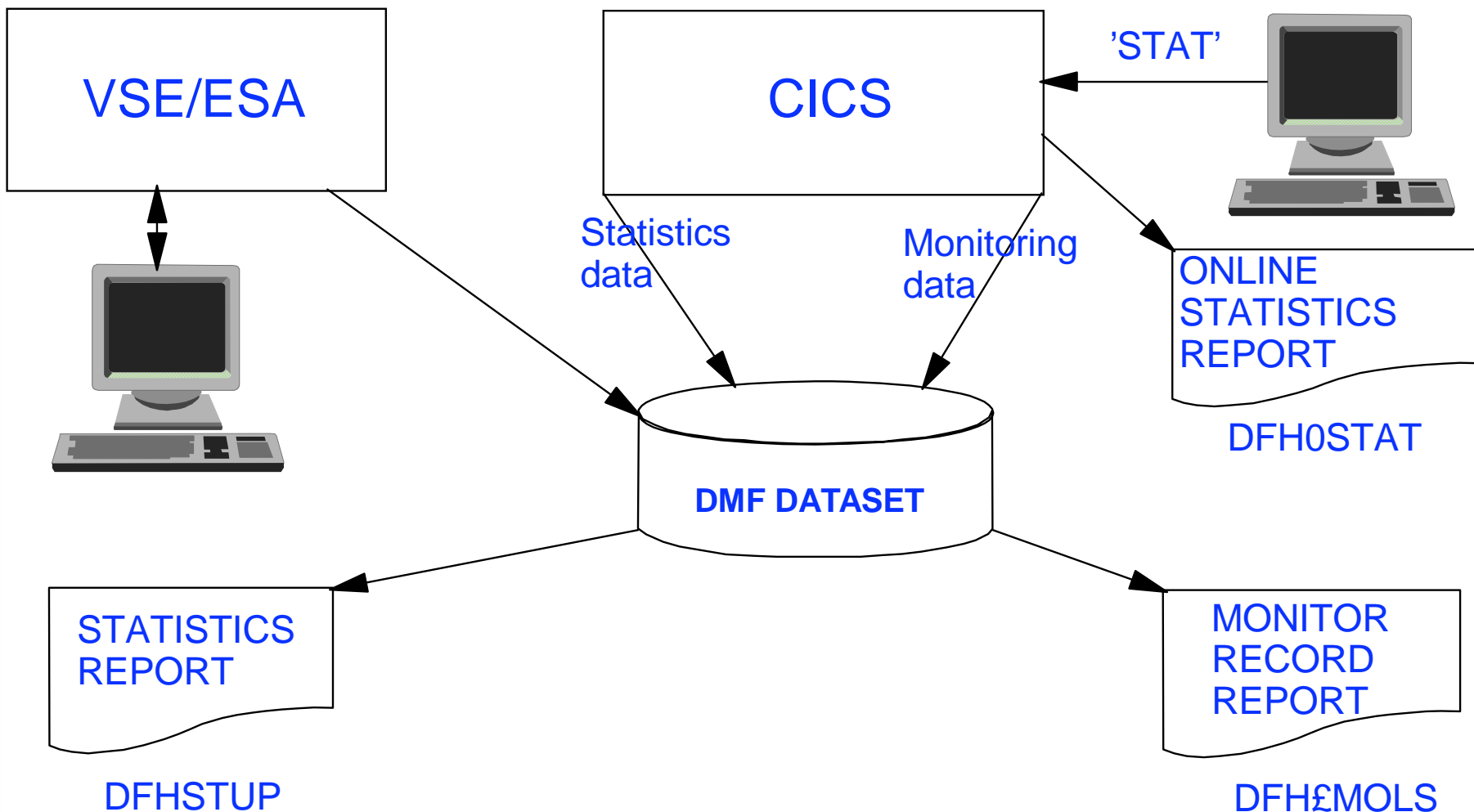
IBM



Monitoring and Statistics - Overview



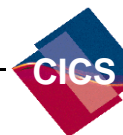
e-business



- DMF has been written to provide a similar facility to SMF provided by MVS
- When you start DMF you must have OS390 coded on the EXEC statement for DFHDFSIP
- It provides facilities to
 - collect data passed to it (in SMF format)
 - ▶ *initially in a data space*
 - offload the data to a VSAM ESDS file
 - copy the ESDS data to sequential files for further processing, and clear the ESDS files



e-business

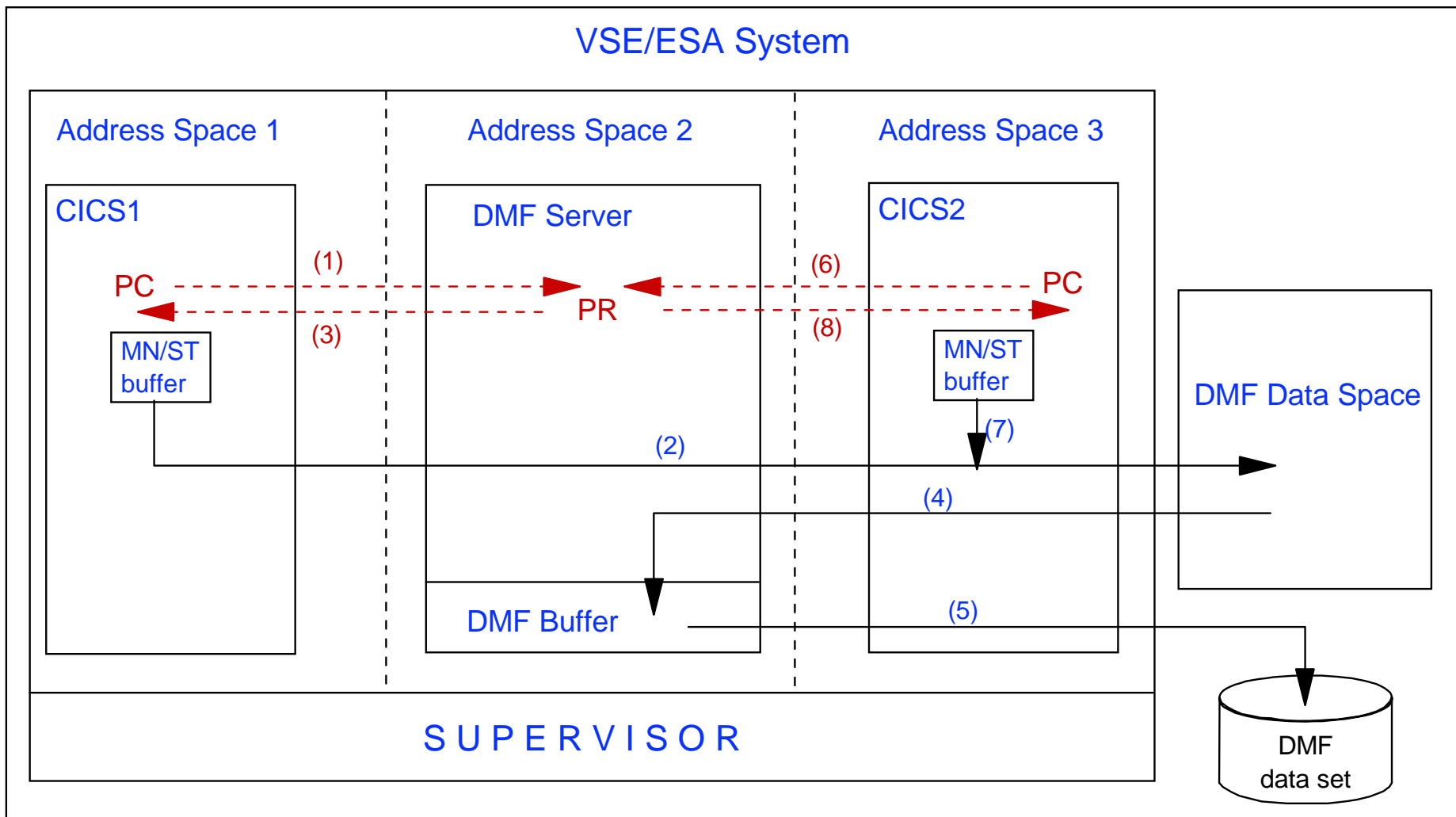


Monitoring and Statistics - DMF Overview

Making the Most of CICS
Transaction Server



e-business



- Generate the start up table using the DFHDMFM macro
 - Default values for everything except data space size, trace table size and suffix
 - Identify start up table to DFHDFSIP by SUFFIX=xx SYSIPT parameter
 - Defaults are supplied in table with suffix SU
- Define VSAM ESDS files to be used by DMF
 - These are used by DMF as a pool of files
- Initialize the VSAM files
 - Use DFHDFOU batch utility
- Tailor DMF start up JCL
- Submit JCL



e-business



- Offload data to sequential file
- For processing of statistics data
 - Use DFHSTUP
 - Can get many types of report
 - ▶ *SUMMARY* - equivalent to old *SHUTDOWN* statistics
 - ▶ *INTERVAL* - can select based on *APPLID*, *TIME*, and type of record
- For processing of monitoring data
 - Use DFH\$MOLS
 - May have to use DFHMNDUP as well
 - ▶ *Use this program when CICS run fills more than one DMF dataset, or when DMF is started after CICS was started. It creates a dictionary record.*
 - But advice is to get a monitoring package to better analyze the data
- DFHSTUP requires a SORT package, DFH\$MOLS can run without SORT, but not if two APPLIDs are to be reported together.

- Statistics sample online program - DFH0STAT
 - Originally written as an aid to CICS and MVS storage usage
 - Command level, COBOL for VSE/ESA and Assembler
 - Illustrates the use of the EXEC CICS API commands
 - ▶ *EXEC CICS INQUIRE and EXEC CICS COLLECT STATISTICS*
 - ▶ *Statistics report output using the Report Controller or TS*
 - ▶ *DFH0STAT can be invoked*
 - ▶ *from a terminal or console*
 - ▶ *from the PLTPI or PLTSD*
 - ▶ *as a STARTed transaction*
- Caution! - if used as a replacement for the shutdown statistics



e-business





e-business

Sample statistics online program - DFH0STAT

```
Sample Program - CICS Statistics Print
```

```
01/11/99 14:02:36
```

```
Type in destination fields if required. Press Enter to print
```

```
Jobname . . . : CICS41  
Applid . . . : CICSA2  
Sysid . . . : CICS
```

```
Node . . . . *      Type in a valid Node. * is default  
Userid . . . . *    Type in a valid Userid. * is default  
Class . . . . A     Type in a valid Class. A is default
```

```
TS Queue Name      Type in TS Queue name, to send out-  
Abbreviated        put to this TS queue instead.  
                   Enter x for abbreviated TS report
```

Put an x here as well, and
only used programs are
shown

```
F3-Exit to CICS
```

For quick snapshot of
stats
enter TS queue name and
then view with CEBR



Sample display from DFH0STAT - looking
at TS queue using CEBR

```
Partition size established from ALLOC parameter . . . : 26,111K  
Storage BELOW 16MB
```

```
Partition GETVIS area size under 16 Mb . . . . . : 8,704K  
Partition GETVIS used area below 16 Mb . . . . . : 6,680K  
Partition GETVIS free area below 16 Mb . . . . . : 2,024K  
Partition GETVIS maximum used below 16 Mb . . . . . : 8,704K  
Partition GETVIS largest free area below 16 Mb . : 2,012K
```

```
Storage ABOVE 16MB
```

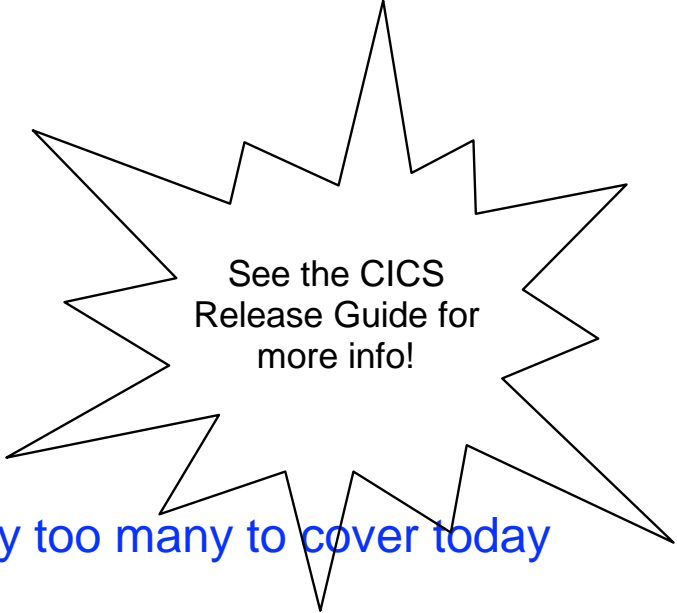
```
Partition GETVIS area size above 16 Mb . . . . . : 16,384K  
Partition GETVIS used area above 16 Mb . . . . . : 13,636K  
Partition GETVIS free area above 16Mb . . . . . : 2,748K  
Partition GETVIS maximum used above 16 Mb . . . . . : 13,888K  
Partition GETVIS largest free area above 16 Mb . : 4,696K
```



e-business



- We have only covered some of the new features introduced with CICS Transaction Server, which
 - Are easy to implement
 - Bring great benefits
 - Result in easier management of CICS systems
 - A reduction in system resource usage
 - Result in improved statistics reporting
 - And improved monitoring data collection
- There are numerous other enhancements, certainly too many to cover today



See the CICS
Release Guide for
more info!

Session E61:
Making the most of CICS
Transaction Server

Neville Brailsford
neville_brailsford@uk.ibm.com





e-business

Appendix



■ The skeleton JCL is passed the following symbolic parameters:

- &SYST A 4-byte identifier of the CICS region issuing the journal archive job, derived from the SYSIDNT system initialization parameter.
- &JJ A 2-digit journal identification (JFILEID), in the range 01 through 99.
- &D A 1-character dataset identification: A or B.
- &JOURDSN A 1- to 44-byte journal dataset name.
- &ODATE A 7-byte journal dataset open date (yyyyddd).
- &OTIME A 7-byte journal dataset open time (hhmsst).
- &CDATE A 7-byte journal dataset close date (yyyyddd).
- &CTIME A 7-byte journal dataset close time (hhmsst).
- &JACDDSN A 1- to 44-byte JACD dataset name.
- &APPLID A 1- to 8-byte CICS APPLID. Note that for an XRF system this is the generic, not the specific, APPLID.



e-business

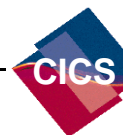
- Parameter substitution by DFHJASP

-You code the skeleton JCL with substitutable characters as follows

```
$$$$ JOB JNM=ARCHTEST,CLASS=0
// JOB ARCHTEST Archive CICSTEST Journal Dataset
$$/* Step 1 : Check journal status
// DLBL DFHJACD,'&JACDDSN',,VSAM,CAT=VSESPUC
etc.
$$/&
$$$$ EOJ
```

-which are changed by DFHJASP on submission to look something like

```
* $$ JOB JNM=ARCHTEST,CLASS=0
// JOB ARCHTEST Archive CICSTEST Journal Dataset
// SETPARAM SYST=CICT
// SETPARAM JJ=01
// SETPARAM D=A
// SETPARAM JOURDSN='CICSTEST.JOURNAL.A'
// SETPARAM ODATE=1998001
// SETPARAM OTIME=0600013
// SETPARAM CDATE=1998001
// SETPARAM CTIME=1825142
// SETPARAM JACDDSN='CICSTEST.DFHJACD'
// SETPARAM APPLID=CICSTEST
/* Step 1 : Check journal status
// DLBL DFHJACD,'&JACDDSN',,VSAM,CAT=VSESPUC
etc.
/&
* $$ EOJ
```



External CICS Interface - Sample JCL

Making the Most of CICS
Transaction Server

```
// JOB ASSEMBLE EXCI PROGRAM
// DLBL IJSYSPH,'TRANSLATION.WORKFILE',0
// EXTENT SYSPCH,,1,0,nnn,mm
ASSGN SYSPCH,SYS001
// LIBDEF *,SEARCH=PRD1.BASE
// LIBDEF PHASE,CATALOG=user.sublibrary
// OPTION CATAL
// EXEC DFHEAP1£,PARM='EXCI'
*ASM XOPTS(EXCI)
<<<< SOURCE STATEMENTS HERE >>>>
/*
* TESTWB COMPILER STEP
CLOSE SYSPCH,00D
// DLBL IJSYSIN,'TRANSLATION.WORKFILE',0
// EXTENT SYSIPT
ASSGN SYSIPT,SYS001
// OPTION CATAL
  PHASE phase_name,*
// LIBDEF *,SEARCH=(PRD1.BASE,user.sublibraries)
// EXEC ASMA90,SIZE=(ASMA90,50K)
CLOSE SYSIPT,SYSRDR
  INCLUDE DFHXCSTB
// EXEC LNKEDT,SIZE=128K,PARM='AMODE=31,RMODE=24'
/*
/&
```

- CATALOG=, Use IJSYSUC
- FILELIST=(CICS410.SYS1.MANY,CICS410.SYS1.MANZ),
- INTERVAL=3000, 30 minutes 0 seconds
- LISTDSN=YES, Show datasets when DMF starts
- SID=3090, System identifier
- SIZE=4, Use a 4M data space
- STATUS=ACTIVE, DMF is active at start
- SUFFIX=SU, This table is called DFHDMFSU
- TRACE=NO, No trace activity
- TRTABSZ=1024, Trace table size is 1M
- TYPE=0:255, Record all DMF data record types
- USAGE=50 Reduce space when 50% full

Alternative to FILELIST:

GENFILES=nn will generate nn files (up to 36)

with default prefix CICS410.SYS.MAN
and optionally

GENPREFIX=prefix

can over-ride default prefix



e-business

- Use IDCAMS - e.g.

– DEFINE CLUSTER (NAME(CICS410.SYS1.MANY)

NONINDEXED -

VOLUME(vvvvvvvv) -

CYLINDERS(10) -

REUSE -

RECORDSIZE(125 32767) -

SPANNED -

CONTROLINTERVALSIZE(8192) -

SHAREOPTIONS(2)) -

CATALOG(user VSAM catalog)

Essential

This catalog must contain
all the DMF data sets

- Repeat for each data set



- Use DFHDFOU

```
// DLBL DFHDCAT,'CICS410.USERCAT',,VSAM  
// DLBL ddname1,'CICS410.SYS1.MANY',,VSAM,  
    CAT=DFHDCAT  
// DLBL ddname2,'CICS410.SYS1.MANZ',,VSAM,  
    CAT=DFHDCAT  
// EXEC DFHDFOU  
INDD ( ddname1, Options (clear) )  
INDD ( ddname2, Options (clear) )  
/*
```

These names must
match (max 7 chars)



e-business



IBM



e-business

► Use the following as a sample

```
// JOB DFHDFSIP
// OPTION NOSYSDUMP
// DLBL IJSYSUC,'user VSAM catalog',,VSAM
// LIBDEF *,SEARCH=PRDI.BASE
// EXEC DFHDFSIP,SIZE=600K,OS390
SUFFIX = SU
/*
// EXEC LISTLOG
/ &
```

Use OPTION SYSDUMP
to get an SDUMP in the
event of a failure

Specify the VSAM catalog
that contains the DMF
data sets





- You request communication with DMF by entering MSG pn where pn is the partition in which DMF is running. DMF will respond with DFHDF0000 Enter command, to which you may enter one of the following
- Valid commands for DMF are:
 - DISPLAY - display file status
 - DISPLAY O - display operating status
 - SETDMF ACTIVE - start recording data
 - SETDMF FLUSH - write data out to data set
 - SETDMF INTERVAL(mmss) - change wakeup interval
 - SETDMF NOACTIVE - stop recording data
 - SETDMF NOTRACE - stop recording trace
 - SETDMF SHUTDOWN - terminate DMF in a controlled manner
 - SETDMF SHUTDOWN,I - terminate DMF in a less controlled manner
 - SETDMF SWITCH - switch to another data set
 - SETDMF TRACE - start recording trace
 - SETDMF DEBUG,[ON|OFF] - enables|disables debug facility
- Alternatively, enter MSG pn,DATA=command



- Offloading the CICS SMF 110 records from DMF
 - DMF utility - DFHDFOU

```
// JOB DFHDFOU
// OPTION PARTDUMP
// DLBL PACC0F,'PACC07.UCAT',,VSAM
// DLBL INDD1,'CICS410.SYS1.MANY',,VSAM,CAT=PACC0F
// DLBL INDD2,'CICS410.SYS1.MANZ',,VSAM,CAT=PACC0F
// DLBL OUTDD1,'TEST.DMF.OUTPUT',0
// LIBDEF *,SEARCH=(PRD1.BASE)
// EXEC DFHDFOU,SIZE=DFHDFOU
  INDD ( indd1, Options (dump))
  INDD ( indd2, Options (dump))
  OUTDD ( outdd1, type( 110 ))
/*
```

Note:
JCL is
incomplete

CICS Operations and Utilities Guide





e-business

Monitoring sample program - DFH\$MOLS

How do I print the performance class data from multiple systems using

```
// JOB DFHDFOU
// OPTION PARTDUMP
// DLBL PACC0F,'PACC07.UCAT',,VSAM
// DLBL INDD1,'CICS410.SYS1.MANY',,VSAM,CAT=PACC0F
// DLBL OUTDD1,'TEST.DMF.OUTPUT',0
// LIBDEF *,SEARCH=(PRD1.BASE,PRD3.PROD)
// EXEC DFHDFOU,SIZE=DFHDFOU
INDD ( indd1, Options (dump))
OUTDD ( outdd1, type( 110 ))
/*
// DLBL PACC0F,'PACC07.UCAT',,VSAM
// DLBL INPUT01,'TEST.DMF.OUTPUT',0
// DLBL SORTWK1,'SORT.WORK.FILE.1',0,SD
// EXEC DFH$MOLS,SIZE=2M
PRINT PER          <-- Print performance class
...
Control statements for data selection
...
SORT              <-- Must be specified for multiple systems
/*
```



■ DFHSTUP - Summary report

- Reconstructs the shutdown view of statistics using
 - ▶ *Unsolicited, interval, end-of-day and requested reset data*
- Reconstructs ALL the data for all statistics reports for each applid for a given date/time selection regardless of the collection type

```
// JOB DFHSTUP
// DLBL SORTWK1,'TEST.SORT.WORK,0,SD
// DLBL DFHSTAT,'TEST.DMF.OUTPUT',0,SD
// DLBL DFHSTWK,'TEST.STAT.WORK',0,SD
// EXEC DFHSTUP,SIZE=2M,OS390
SORT WORK=1
SELECT APPLID=(applid1,applid2)
SELECT TYPE=(DISPATCHER,PROGRAM,STORAGE,TRANSACTION,TSQUEUE)
SUMMARY
/*
```



e-business



IBM